

REMARKS

The specification has been amended to claim priority to the parent application.

The claims have been amended to conform to the formal requirements of the U.S. Patent Office. No new matter has been added. Entry of the amendment and a favorable indication are respectfully requested.

Claim Objections

In view of the amendments made herein, it is respectfully submitted that the Examiner's objections have been overcome. Reconsideration and withdrawal of the claim objections are respectfully requested.

Anticipation Rejection over McCann

Claims 1, 2, 6, 8, 9 and 11-14 stand rejected as allegedly anticipated by U.S. Patent No. 5,637,974 to McCann. For at least the reasons that follow, Applicant respectfully submits that the claims, as amended herein, are patentable over the art of record.

The claimed invention is directed to a sensor device for determining the rotational position of a motor. More specifically, the claimed disclosure provides for determining and adjusting the rotational position of the motor by (i) mounting a sensor in a position relative to the rotor; (ii) generating and recording increments by the sensor during rotation of said rotor; (iii) simultaneously recording the angular position of the rotor; and correlating the recorded increments and the recorded angular position by storing the correlation.

In one embodiment, the electric motor is externally driven and the angular position of the rotor needed for determining the commutation angle can be determined, for

example, by using the back EMF. The angular positions, corresponding to the commutation angles, can be correlated to the increments of the sensor and the correlation can be saved. During the motor's operation, the correlation can be retrieved in order to find increments of the sensor where suitable commutation signals should be generated. The step of retrieving and using the saved correlation during operation is specified throughout the specification, for example, at claims 3 and 4 and pages 4-5 of the specification.

McCann fail to disclose or suggest the claimed features. The reference is directed to a method for generating commutation signals. Referring to Fig. 5, McCann shows Hall Sensors (68) used for determining the position (θ_c) of a rotor with a relatively low resolution. In addition, voltage (V_n) and current (i_n) from the phase windings are used by controller (40) to estimate the rotor position. The signal (θ_c) generated by Hall sensor is only used for correcting the estimated rotor position (see col. 3, lines 30-49), from which the commutation signal is generated as needed. In fact, the reference discloses “[T]he generated estimated rotor position signal is substantially continuously-valued and is used by a commutation means programmed in the controller for controlling commutation of the machine phase.” Abstract, lines 18-22.

The reference fails to disclose or suggest deriving and/or storing a correlation between the angular position of the rotor and sensor increments as claimed herein. The only parameter which is stored in McCann seems to be L_n , which is the stator winding inductance of phase n. This parameter is a constant motor parameter and has nothing to do with the claimed embodiments.

For these reasons, Applicant respectfully submits that the claims are patentable over McCann. Reconsideration and withdrawal of the anticipation rejection are respectfully requested.

Anticipation Rejection over Bechtler

Claims 3-5 stand rejected as allegedly anticipated by German Reference DE 101 18 072A1 to Bechtler. Applicant respectfully disagrees with the grounds of this rejection.

First, each of claims 3-5 depends from claim 1, which is patentable over Bechtler. Accordingly, each of claims 3, 4 and 5 is deemed patentable by the virtue of this dependence.

Second, Bechtler discloses an electric motor (1) comprising a rotor position sensor (4) and a memory (EEPROM 11) in which an offset angle (reference position, zero index or zero position) is stored so that the corresponding motor position is available when the rotor position is changed. To this end, the rotor of the electric motor is brought into a defined angular position and the signal of the rotor position sensor is determined (see col. 1, lines 15-23 and col. 4, lines 36-42.) However, Bechtler only saves the offset angle and an external storage is provided for the offset angle in case component of the system are exchanged. Bechtler also fails to disclose or suggest a correlation between sensor increments and the angular position/commutation angle of the rotor, let alone save any correlation of these values.

For these reasons reconsideration and withdrawal of the anticipation rejection over Bechtler are respectfully requested.

Allowable Claims

The Examiner objects to claims 7 and 10 and states that the claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

record. However, for the reasons discussed above, it is respectfully submitted that each of the independent claims 1, 11 and 12 is readily patentable over the art of record. Accordingly, independent claims providing the recitations of each of claims 7 and 10 (including the base claim and any intervening claims) will not be proffered at this time.

CONCLUSION

The Office is requested and authorized to charge any fee associated with this application, including any extension of time fees to maintain the application pending, to Deposit Account No. 04-1679 to Duane Morris LLP.

The Office is invited to contact the undersigned to discuss any issue relating to this application.

Respectfully submitted,



Mark C. Comtois	Reg. No. 46,285
L. Lawton Rogers, III	Reg. No. 24,302
D. Joseph English	Reg. No. 42,514
Patrick D. McPherson	Reg. No. 46,255

DUANE MORRIS LLP
1667 K Street, N.W., Suite 700
Washington, D.C. 20006
Telephone: (202) 776-7800
Facsimile : (202) 776-7801

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